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ROAD-MARKING APPARATUS AND VEHICLE

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This invention relates to a road-marking vehicle designed to be driven or towed on road surfaces for mechanically laying on and adhesively connecting to said surface a road-marking known material in strip form, as an elasto-plastic compound material, a rubbery fiber reinforced or not reinforced compound material in strip form possessing adhesive character or designed to be provided with an adhesive agent prior to its being laid on and engaged with the road surface.

More particularly, it is an object of this invention to provide a new and improved vehicle as above, designed for mechanically laying down and adhesively applying on road surfaces a continuous or interrupted strip of said road-marking material or materials, and the like, namely for providing the said road surface with centre-lines or with track-dividing lines or other traffic signs on road surfaces, prevailingly but not exclusively located lengthwise of the road, the said laying and application of strip material being carried on by the hereinafter described assemblies, devices and means of the vehicle of the invention as the latter is caused to travel on the road surface along a given path.

A more specific object of this invention is to provide an improved road-marking strip material laying mechanism including strip material guidingly feeding and laying down rotary means for continuously or interruptedly putting the said strip material in intimate and adhesive contact and engagement with the said road surface.

The present invention further contemplates, in a preferred form of embodiment thereof, the mechanical laying on and adhesive attachment to the said road surface of spaced lengths of road-marking strip material of the type considered, and the provision of mechanisms, devices and means adapted to overcome the various problems involved in such road marking operation, in particular for ensuring the evenly spaced feeding of lengths of said material to the said laying down device and the full and sure attachment of said lengths in particular, of the respective leading end portions to the road surface.

It is therefore a further object of this invention to provide, in a strip material laying down vehicle for the above operation, means for supplying a continuous strip of said material, cutter means for cross-cutting the same into successive lengths, holding means for supporting the leading end of the strip coming forth from the supply means upon each cutting step, feeding and guide means adapted for successively engaging said leading ends and the respective lengths of strip material and guidingly to put said ends and lengths in intimate contact with said road surface, and pressing means adapted for downwardly urging the said leading ends on the road surface to which said ends have previously been put in contacting relationship, for ensuring the full and throughout permanent adherence of the strip material, in particular at its end portions, with said surface.

These and other objects and advantages of the invention are in part obvious and in part will be made apparent as this invention proceeds, and the features which are believed to be new and characteristic of the invention are in particular set forth in the appended claims. The invention itself, however, both as to its construction and to its mode of operation will be best understood from the following detailed description of preferred forms of embodiment thereof, when taken in conjunction with the accompanying drawings, forming an essential component of this disclosure, and wherein:

FIGURE 1 is a vertical longitudinal elevational view of the assembly including the combined strip material feeding, laying down and pressing devices, means and elements in continuous strip applying condition of operation;

FIGURE 2 illustrates in similar view the feeding means of said assembly during the engagement step of the leading end of strip material, upon cutting a length therefrom, while performing a road-marking operation by successively laying down spaced lengths of strip material;

FIGURE 3 is a diagrammatical side elevational view of the general arrangement of the various essential means in a vehicle of the invention, including a modified assembly; and

FIGURE 4 is a somewhat simplified view of an exemplificative mechanism adapted for phasedly driving the various co-operating cutter, holding and feeding devices of the said assembly shown in either the preceding FIGS. 1 and 2 or FIG. 3.

Like reference numerals refer to like parts and components throughout the several figures of the drawing, mere structural details and various vehicle components having been omitted where they are appertaining to the known art. Referring first to FIGS. 1 and 2 inclusive:

In the form of embodiment shown, the illustrated assembly is intended for laying down on and adhesively connecting to a road surface, generally indicated at **10**, a strip material indicated at **11***a* as coming forth from a suitable supply (not shown) and at **11***b* as being already laid down and adhesively connected on and to the said road surface.

The said supply may consist of a roll of continuous strip material, carried by the same vehicle or by another vehicle towed or driven behind the material laying vehicle. Motor driven strip material feeding means may be provided for feeding the material into the apparatuses hereinafter described, and clutch and/or brake means being provided for ensuring the correct continuous and/or interrupted feeding; such means may in their turn be provided with self-acting control means, responsive to the tension to which the material at **11***a* is subject, for example, by electric signalling from a potentiometer **12** (FIG. 4) controlled by a known tension-metering device generally indicated at **13**.

The material laying assembly of FIG. 1 is supposed to be supported by the frame structure (as indicated at **14** in FIG. 3) of a road vehicle (not shown) adapted to travel in direction A along a given path on the road surface to be marked. Such vehicle will obviously include steering means and other facilities, such as optical aiming means and the like, for ensuring the correct motion of said vehicle so that the strip material laying devices carried thereby will exactly track the path to be marked.

The assembly of FIG. 1 includes a strip material pressing structure including a frame **15** rotatably supporting rollers **16** and **17** at its fore and respectively rear end portions, whereby a substantial space is defined therebetween, wherein a corresponding length of strip material may be subject to a pressure for ensuring the full engagement of the strip material, in particular, the leading edges of lengths of said material, upon first contact thereof with the road surface, as occurring at **18**. The provision of pressing means capable of effective pressing down of such leading ends had been proved as essential for actual marking of road surfaces with interrupted strips, i.e. with spacedly laid down lengths of strip material.

Obviously such pressing down might be obtained by making use of differing but operatively equivalent means, as by means of relatively movable roller means, for example, or by making use of temporary clamping means